

REMARKS

Claims 1-8 are pending in this application.

Claims 1, 3, and 5-8 stand rejected under 35 U.S.C. § 102 as being anticipated by Kelley et al. (U.S. Patent No. 4,040,944) (“Kelley”). This rejection is respectfully traversed.

The claimed invention relates to a process for reducing content of sulphur compounds and polycyclic aromatic hydrocarbons in a hydrocarbon feed stock. As such, independent claim 1 recites a “process for reducing content of sulphur compounds and polycyclic aromatic hydrocarbons in a hydrocarbon feed stock” by *inter alia* “contacting the feed stock with hydrogen over a hydrotreating catalyst at conditions being effective for hydrotreating and obtaining a hydrotreated effluent” and “cooling the hydrotreated effluent.” Independent claim 1 also recites “contacting the hydrotreated effluent with a hydrotreating catalyst at conditions being effective for conversion of polycyclic hydrocarbons to monoaromatic compounds” and “introducing the hydrotreated effluent from step (c) into an FCC unit for producing gasoline.”

Kelley relates to a method of manufacturing catalytic cracking charge stocks by hydrocracking. According to Kelley, charge stock containing a relatively large proportion of heavy hydrocarbons boiling above about 800° F is produced by first subjecting a raw feedstock boiling predominantly above 600° F and containing a substantial proportion of material boiling above 800° F to catalytic hydrofining followed by catalytic hydrocracking at high pressures. (Abstract). Kelley teaches that the hydrocracking catalyst and conditions “are chosen so as to achieve selective conversion of material boiling between about 600° F and 800° F to lower boiling materials with a relatively minor conversion of the 800° F + material.” (Abstract). In this manner, “[t]he resulting product boiling above 400° F is rich in 800° F + material, and constitutes an excellent catalytic cracking charge stock.” (Abstract).

Kelley does not disclose all limitations of claims 1, 3 and 5-8. Kelley fails to teach or suggest a “process for reducing content of sulphur compounds and polyaromatic hydrocarbons in a hydrocarbon feed stock” by *inter alia* “contacting the feed stock with hydrogen over a hydrotreating catalyst at conditions being effective for hydrotreating and obtaining a hydrotreated effluent” and “*cooling the hydrotreated effluent*,” as independent claim 1 recites (emphasis added). Kelley teaches a dual-step process of subjecting a raw feedstock boiling predominantly above 600° F and containing a material boiling above 800° F to catalytic hydrofining followed by catalytic hydrocracking at high pressures. Kelley is silent, however, about “*cooling the hydrotreated effluent*” subsequent to “contacting the feed stock with hydrogen . . . for hydrotreating and obtaining a hydrotreated effluent” and before “contacting the hydrotreated effluent with a hydrotreating catalyst at conditions being effective for conversion of polyaromatic hydrocarbons to monoaromatic compounds,” as independent claim 1 recites (emphasis added). In fact, Kelley specifically teaches against the intermediate cooling step; Kelley emphasizes that “total effluent from hydrofiner 10 is transferred to hydrocracker 12 via line 14, *without intervening cooling*, condensation or separation of ammonia and hydrogen sulfide generated in the hydrofiner.” (Col. 4, lines 26-30). For at least these reasons, Kelley fails to teach or disclose all limitations of independent claim 1, and withdrawal of the rejection of claims 1, 3 and 5-8 is respectfully requested.

Claim 2 stands rejected under 35 U.S.C. § 103 as being unpatentable over Kelley. This rejection is respectfully traversed.

Claim 2 depends on independent claim 1 and recites that “the temperature in step (c) is between 50°C and 150°C lower than outlet temperature from step (a).” As noted above, Kelley fails to teach or suggest all limitations of independent claim 1. Accordingly, withdrawal of the rejection of claim 2 is respectfully requested.

Claim 4 stands rejected under 35 U.S.C. § 103 as being unpatentable over Kelley in view of Inwood (US Patent No. 3,691,060). This rejection is respectfully traversed.

Claim 4 depends on independent claim 1 and recites that the step of “contacting the hydrotreated effluent with a hydrotreating catalyst at conditions being effective for conversion of polycyclic aromatic hydrocarbons to monoaromatic compounds” is “performed in a final catalyst bed of the hydrotreating zone.”

Inwood relates to a method of “hydrogenation of aromatic hydrocarbons.” (Abstract; Title). Inwood teaches that “[a]romatic hydrocarbon feedstock containing organic sulfur compounds are hydrogenated in a ‘single-stage’ process, utilizing a dual-catalyst hydrogenation system.” (Abstract). In this manner, “[t]he feed is first hydrofined over a sulfactive catalyst . . . and total effluent is then hydrogenated over a sulfur-sensitive Group VIII noble metal hydrogenation catalyst.” (Abstract).

The subject matter of amended claim 4 would not have been obvious over Kelley in view of Inwood. Kelley and Inwood, whether considered alone or in combination, fail to teach or suggest all limitations of independent claim 1. As noted above, Kelley fails to teach or suggest “*cooling the hydrotreated effluent*” subsequent to “contacting the feed stock with hydrogen . . . for hydrotreating and obtaining a hydrotreated effluent” but before “contacting the hydrotreated effluent with a hydrotreating catalyst at conditions being effective for conversion of polycyclic aromatic hydrocarbons to monoaromatic compounds,” as independent claim 1 recites (emphasis added).

Similarly, Inwood fails to teach or suggest the sequence of steps recited in independent claim 1. Inwood does not teach or suggest “contacting the feed stock with hydrogen over a hydrotreating catalyst . . . and obtaining a hydrotreated effluent,” “cooling the hydrotreated effluent,” “contacting the hydrotreated effluent with a hydrotreating catalyst at conditions being effective for conversion of polycyclic aromatic hydrocarbons to monoaromatic compounds” and “introducing the hydrotreated effluent from step (c) into an FCC unit for producing gasoline,” as independent claim 1 recites. Inwood teaches that the first step requires “hydrofining conditions and catalysts” and that the second step requires “hydrogenation conditions and catalysts,” without an intermediary cooling step. (Col. 3, lines 33-75; Col. 4, lines 1-20). For at least these reasons, the Office Action fails

to establish a *prima facie* case of obviousness and withdrawal of the rejection of claim 4 is respectfully requested.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

Dated: July 18, 2003

Respectfully submitted,

By, 
Stephen A. Soffen

Registration No.: 31,063

Gabriela I. Coman

Registration No.: 50,515

DICKSTEIN SHAPIRO MORIN &
OSHINSKY LLP

2101 L Street NW

Washington, DC 20037-1526

(202) 785-9700

Attorneys for Applicant